Graduate Studies News

CONCORDIA UNIVERSITY

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From the Dean's Desk

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E.W.R. Steacie Memorial Fellowship

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From the Dean's Desk (March 1988)

Knowledge Engineering: A Cause for Concern?

The new proliferation of midsized and small computers in almost every walk of life has had dramatic consequences for all segments of society. It has given rise to a new activity known as ''knowledge engineering'' which, until a few years ago, would have seemed like a contradiction in terms. It is rather frightening to realize that now consummate technologists, i.e., some of the leading innovators in the computer industry, have the power to influence the course of history by managing the way knowledge is accumulated, analyzed, classified and disseminated.

John Sculley, the Chairman and Chief Executive Officer of the Apple Computer Empire was recently made chair of a national educational organization in the United States, and in an interview in the February 8, 1988 edition of the computer journal **Digital Reviews,** he spoke about some of the perceived needs of modern education. His views are of more than passing interest since the knowledge engineers in the computer industry whom he and other computer gurus control, influence not only the scope of knowledge, but also the way in which we acquire, process and ultimately use that knowledge. In answer to the question as to what inspired his interest in education, he replied:

''Well, I believe that we've gone through a tremendous change in the world, from the Industrial Age to the Information Age. And if the United States is going to be able to maintain its affluent, middle-class lifestyle in the late 20th century, early 21st century, then we're going to have to find some way of adding value in the global marketplace. I believe that value is going to come from new companies and new industries, which are going to be largely idea- and information-dependent. Yet our schools are still teaching a curriculum that's based in the early Industrial Age, where people would have the same jobs for the whole lifetime. So I'm interested in seeing a revolution in public education that will allow America to be competitive in the early 21st century and I am now chairman of the National Center for Education in the Economy.''

Until four years ago, John Sculley worked for the Pepsi Cola company and knew next to nothing about computers. Today he chairs a major educational organization aiming to prepare North America and, by extension, the Western World, for the Information Age.

From an academic point of view, this development raises fundamental questions that should be addressed by the university community. An example may illustrate my concern. The supreme activity of a mathematician is to conceive of a new theorem and **to prove** the truth of that theorem. Within the culture of mathematics there are accepted **principles of reasoning and agreed procedures** for carrying out such proofs. Recently

a famous mathematical problem, the **four colour problem,** was solved, but its solution involved heavy use of computers because of the computational complexity of the arguments required. The proof of the theorem is therefore only as good and reliable as the computer programs used for its creation. The relevant computer programs, on the other hand, are the work of "knowledge engineers" with their own logic and understanding of thought processes. What is therefore missing is a **proof** of the correctness of the programming steps and a further **proof** that the hardware implementation of the programs faithfully reflect the knowledge engineers' intentions. These additional proofs are probably more difficult to come by than a traditional solution of the original mathematical problem.

Research and graduate studies epitomize the creation of knowledge in universities. More and more, the tools for the creation of this knowledge are provided by the computer industry. This places an unprecedented responsibility on the shoulders of the people behind the scenes in that industry about whom we know virtually nothing. The way hardware and software are engineered will increasingly determine the way our researchers and graduate students organize, classify and, often, discover knowledge. The tangible benefits of this new process are clear to all of us. As academics we must nevertheless become involved and reflect on the soundness of the foundations of the process.

M. E. Szabo

Diploma in Adult Education

Adult education is booming – most school boards and community centres now offer courses geared to meet adult needs and that has created a growing demand for educators trained to teach this mature and special population.

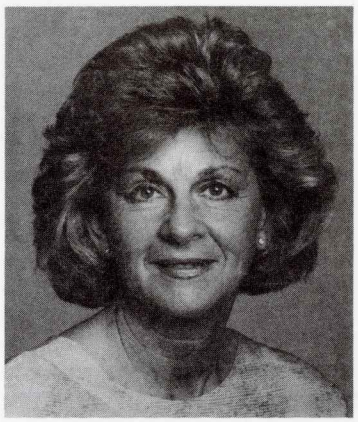
Concordia's graduate diploma program meets that demand: the university offers the only graduate Diploma in Adult Education in Canada. The first graduates of the program, which started in 1984, will receive their diplomas at this year's spring convocation.

Program Director Riva Heft said that diploma students are often on surplus lists of school boards, or teachers who want to change their jobs. Others are nurses responsible for education in hospitals or clinics, trainers in banks, second-language teachers, or people already working with adult populations at school boards.

"With declining enrolment in elementary schools, most teachers are facing a population of mature students," said Heft, "and they're not yet prepared for that. In a conventional high school situation students come to a class with certain expectations that the teacher is the authority and that knowledge magically gets deposited into the minds of the students. With adults, this approach and attitude do not work."

"If adults don't like what they're getting or what they're doing, they just leave," agreed diploma student Eunice de Gruchy. "I'm very open and frank with students and they give back a lot from their life experiences."

Like many students in the program, de Gruchy brought a rich background of her own experience with her when she enrolled. With a bachelor's degree in English Literature and several years as a businesswoman and as a substitute teacher behind her, she is working on her diploma while teaching English as a second language for the Chateaugay Valley Regional School Board.



Director for the Diploma in Adult Education: Riva Heft

"Very few people in adult education are trained as adult educators," noted Heft, "and at some point in their careers they see some things that work and some that don't. They come here to find out how to do more things that work and how to organize their thinking about education and about their goals."

"The basic question we try to answer is how we as adult educators can facilitate learning in another adult," Heft added, "and what we need to know in order to do that. Anyone who is going to be called upon to teach an adult population should consider at least some of the courses in this program."

The four-phase program offers introductory courses, topics courses, foundation courses in educational studies, and integrated seminars. To permit the maximum flexibility the phases are not sequential. Heft recommends, however, that students complete the introductory courses before entering the other three phases.

Heft said she is "very pleased" with the success of the program and added that her "students are the most exciting component in it. They come with such a hunger for knowledge and they get so turned on by their own capacities – it's wonderful to watch. I feel honored to be part of that."

For working students the 30-credit diploma is ideal: the program can be completed in one year if

study is undertaken on a full-time basis, or it can be completed in approximately two and a half years if the student works and follows the program on a part-time basis.

For more details about the program, call (514) 848-2029, or write Riva Heft, Program Director for the Diploma in Adult Education, Concordia University, HB 102, 7141 Sherbrooke Street West, Montreal, Quebec H4B 1R6.

The Joint Doctoral Program in Communications

Maurice Charland is feeling like a proud papa these days – Concordia's Department of Communication Studies joined Université de Montréal and Université du Québec à Montréal in giving birth to a Ph.D. program in September, and Charland is director of Concordia's section of the program.

Of three Ph.D. communication programs in Canada, this is the largest; with 20 faculty members from three universities, seven of them are from Concordia. Because it is an inter-university program, courses are team-taught and bilingual.

"Joint programs are interesting and challenging", said Charland, "and this one is a bicultural juncture of American-Canadian Franco-Québec scholarship. The mix of traditions makes it very rich, and students get access to resources they could not get otherwise. It's an intellectually rich and varied environment."

There is one director for the program as a whole. This will be a position which rotates from university to university. Each university in the new program has its local program director. All applicants are examined by an inter-university graduate studies committee. They apply to and are admitted into one university which is the 'home' for the student.

The 90-credit program focuses on four areas: 1) the social and cultural significance of communication technology, 2) the theory and analysis of mediated discourse and messages, 3) organizational communication, and 4) communication and development.

The first area is somewhat open, it covers the roles of communication technology in society and culture, said Charland, and the role it plays in social formation.

"It considers communication technology patterns and communication levels in the political process and the formation of ideology", he said. "The course of study a student chooses depends in great part on the supervisor with whom the student will work, and it could include analysis of cultural studies, mass communication research, communication of politics, or social politics and technology."

The second area deals with communication in a way akin to the way in which literary analysis deals with literature: one looks at a medium like film and discusses structure, message and philosophy and thereby, students can study the process of signification and interpretative structures.

M. Charland, Concordia director for the joint doctoral program.

The third area covers the form of organizations and their administrative structure.

"Flow charts don't tell you now they work", said Charland. "They won't tell you now an organization functions through communication patterns or whether information flows one way or two ways. For example, if you get everybody computer terminals and telephones, how does that change how a business functions? This looks at the ways in which communication technology relates to patterns of communication in industrial applications for effective communication patterns."

The fourth area covers the role communication plays in such things as government policy.

"In this domain of study one might consider how the use of communication technology in Latin America promotes people's having water, or agriculture or birth control, or one could consider the impact of communication technology on social and economic development in Third World countries or the Canadian north", said Charland. "Students can study the question of what happens when TV is introduced into Canada's far north and how one might integrate new technology with a traditional lifestyle."

Students must be considered excellent candidates to be accepted, Charland warned. Doctoral candidates must have an M.A. in Communication or its equivalent and must be competent in both English and French.

Student and thesis advisor ratios determine whether there is room for a student to research a particular area: when students apply they must indicate an area of interest and the professor with whom they want to work – if four students ask to work with the same professor, all four cannot be accepted.

Ph.D. graduates aim for academic, corporate or government posts – those working in organization communication are in a good position to enter the corporate world, and graduates who focus on communication policy have good chance of getting government positions. Government contracts to research specific areas of communication are often awarded to scholars with a Ph.D., and those with doctorates often submit research projects to government bodies such as Canadian Radio and Telecommunications Commission.

This year the program accepted four candidates. One aims at teaching full-time in university. Another worked as an editor at Cinema Canada for a number of years and intends to pursue studies in cultural theory, the philosophy of communications and communication policy. The third works at the Douglas Hospital in Verdun, and is interested in the interaction of psychiatric patients and how that population integrates TV in its experience.

The fourth candidate is a composer interested in the role of technology in creation and production of music. Recording technology and the process of recording structure how musicians and composers do what they do; he intends to focus on current or popular music.

INFORMATION
For more information about the Ph.D. program, call (514) 848-2546, or write Maurice Charland, Ph.D. Program Director for Communication Studies – Concordia University, 7141 Sherbrooke Street West, BR 429, Montréal, Québec, H4B 1R6.

Profile

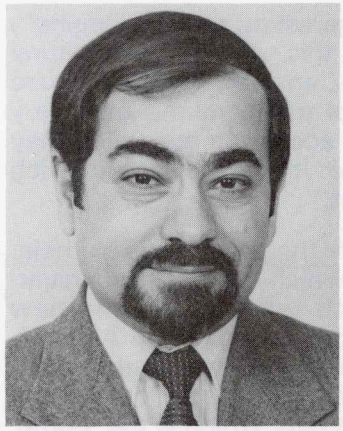
The E.W. Steacie Memorial Fellowship is one of Canada's most prestigious awards for achievements in science and engineering. It is awarded annually by NSERC to winners chosen from the top researchers nominated by all Canadian Universities. On Monday, January 19, the president of NSERC presented this significant award to Dr. Habashi, a professor of Mechanical Engineering at Concordia University.

Over the next two years Dr. Habashi will use the proceeds of the award to develop new methods for the solution of the Navier-Stokes equations at Concordia's Computational Fluid Dynamics Laboratory. Dr. Habashi is well known for helping Canada set world standards in aviation technology by developing some of the computational codes most frequently used in aerodynamics. He has played a major role in redefining the designs of many aircraft, most recently for the de Havilland Dash-8. In collaboration with his research colleagues he has contributed to the success of the gas turbine industry, with dramatic results in export sales.

The internationally renowned Dr. Habashi is the editor of five major books on computational aerodynamics as well as a large number of publications. He has also received numerous awards over the years in acknowledgment for his work. He has been invited to teach three international courses, one at Purdue University in Indianapolis, one at the University of Texas in Austin, and another at the reputable Von Karman Institute for Fluid Dynamics in Brussels.

W.G. Habashi was born in Egypt and attended McGill University (BA '67; MSc '69). He received his Ph.D. in Aerospace Engineering at Cornell University in 1975.

After having spent from January 1974 to September 1975 as Assistant Professor of Mechanical Engineering at the Stevens Institute of Technology in New Jersey, he joined Concordia University in the fall of 1975 as an Assistant Professor. He is currently full professor at Concordia.



Dr. W.G. Habashi

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